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FOOD INSECURITY, FOOD PANTRY USE AND STIGMA: A STUDY OF U.S.
CITIZEN AND NON-CITIZEN UNIVERSITY STUDENTS

by

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ABSTRACT OF THE THESIS

FOOD INSECURITY, FOOD PANTRY USE AND STIGMA: A STUDY OF U.S. CITIZEN AND NON-CITIZEN UNIVERSITY STUDENTS

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Food insecurity among students is a concern in many universities across the country. The purpose of this research is to investigate food insecurity, food pantry use, food pantry use stigma, and how these vary among individuals with varying citizenship statuses. A cross-sectional analysis was conducted to analyze the prevalence of food insecurity and food pantry use among U.S. citizen and non-U.S. citizen undergraduate students at Rutgers University-New Brunswick (N=5,063). A novel, 13-item scale to measure the perceptions of an on-campus food pantry was developed, administered to students who had heard of the food pantry and were not highly food secure, and later factor analyzed. The study found that a third (31.5%) of undergraduate students were food insecure and less than one-in-twenty (4.1%) of students aware of the on-campus food pantry reported using it. Three subscales were identified from the factor analysis, including the Food Pantry Use Stigma Subscale, which measures the fear, concern, and embarrassment related to food pantry use. Almost three-in-four students agreed that there is stigma around using the food pantry. Undergraduate non-U.S. citizen students report more food insecurity and use of the on-campus food pantry and reported feeling more food pantry use stigma compared to U.S. citizen students, highlighting that they are a

particularly at-risk group of Rutgers-NB students. Implications for future research and policy, as well as recommendations for the Rutgers Student Food Pantry, are discussed.

Key Words: Social stigma, food insecurity, universities, international students, citizenship, food pantry, non-citizen

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CHAPTER ONE

INTRODUCTION

Food security is defined by the United States Department of Agriculture (USDA) as the access by all people at all times to enough food for an active, healthy life (Coleman-Jensen, 2018). In contrast, food *insecurity* (FI) is the reduced or disturbed eating patterns because of insufficient money and other resources of food (Coleman-Jensen, 2018). FI can lead to nutrition deficiencies, the development of diseases, mental health problems, and decreased psychosocial health (Bahadur, Pai, Thoby, & Petrova, 2018; Gundersen & Ziliak, 2015; Hartline-Grafton & Dean, 2017; Loring & Gerlach, 2015; Skalicky et al., 2006). Additionally, those who are at the greatest risk of food insecurity include the socioeconomically disadvantaged, those who live in areas with increasing costs-of-living, those who have experiences of prolonged unemployment, immigrants, and those who are reliant on food assistance programs (Beaulieu, 2014; Hartline-Grafton & Dean, 2017; Loring & Gerlach, 2015; Wight, Kaushal, Waldfogel, & Garfinkel, 2014). Food assistance programs, like the Supplemental Nutrition Assistance Program (SNAP), the Emergency Food Assistance Program (TEFAP), and food pantries, were created to address food insecurity in the United States (U.S. Department of Agriculture, 2020).

Food insecurity is a problem among college and university student populations. A recent large survey of college students across the U.S. found that 48% of students in two-year academic institutions and 41% of students in four-year academic institutions experienced FI (Baker-Smith et al., 2020). Other research has shown that FI among college students can lead to lower GPAs, increased stress, increased risk of obesity, more

disordered eating patterns and depression, and poorer psychosocial health compared to food secure students (Darling, Fahrenkamp, Wilson, D'Auria, & Sato, 2017; Raskind, Haardörfer, & Berg, 2019; Wall-Bassett, Li, & Matthews, 2017). Among the FI student population, immigrant students (e.g. foreign international and non-U.S.-citizen students) have been consistently shown to be at a greater risk of FI compared to U.S. citizen students (Baker-Smith et al., 2020; El Zein, Mathews, House, & Shelnutt, 2018; Henry, 2017). Furthermore, citizenship status is a requirement for most food assistance programs, and is suspected as a barrier to food security (El Zein et al., 2018; National Conference of State Legislatures, 2014; National Immigrant Law Center, 2007; U.S. Department of Agriculture, 2020).

Food pantries can be helpful resources for students to improve their food security, yet students report not using food pantries and/or other food assistance programs for which they may be eligible (Brotton & Goldrick-Rab, 2018; Education Advisory Board, 2018; El Zein et al., 2018). Barriers to student food-pantry-use consist of the lack of awareness of the food pantry, students are misinformed/find eligibility requirements are difficult to understand, and social stigma associated with food pantry use (Baker-Smith et al., 2020; Brotton & Goldrick-Rab, 2018; Bubltz, Hansen, Peracchio, & Tussler, 2019; El Zein et al., 2018; Freudenberg, Goldrick-Rab, & Poppendieck, 2019; Government Accountability Office, 2018; Stuber & Schlesinger, 2006).

Social stigma has been frequently identified by researchers as an important barrier to food pantry use, and can be defined as the feeling of embarrassment, fear, and shame of using a food pantry. Food pantry use (FPU) stigma has generally been studied using open-ended survey responses (El Zein et al., 2018) or qualitative research (Allen &

Alleman, 2019; Henry, 2017). It has not yet been systematically explored using quantitative methods. One goal of this study was to be the first to systematically measure food pantry use stigma and to examine how it may vary by citizenship status among university students.

Campus Context

Two recent studies of RU-NB students show a prevalence of about a third of undergraduate students being FI (Cuite et al., 2018, 2020). Given the prevalence of FI students at Rutgers University, it is important to identify circumstances and barriers that put some students at greater risk of FI.

Notably, the international/non-citizen students have been found to be at greater risks of FI compared to the general student population. Around 1,500 international students from 125 countries outside the U.S. are admitted at Rutgers University each fall (Rutgers Global, 2017a), meaning this is a concern for a large number of students.

Research Questions

This study used data from a 2019 survey on basic needs security, which includes food and housing security among RU-NB students. The study explores the relationships of food insecurity, food pantry use, and social stigma by citizenship status. This thesis was designed to answer the following research questions.

1. RQ1: What is the prevalence of food insecurity among RU-NB undergraduate students?
 - a. RQ1A: Does this vary by citizenship status?
2. RQ2: What is the prevalence of use of the Rutgers Student Food Pantry?
 - a. RQ2A: Does this use vary by citizenship status?

3. RQ3: Is there social stigma regarding use of the Rutgers Student Food Pantry among food insecure undergraduate students?

a. RQ3A Does this vary by citizenship status?

It was hypothesized that non-citizen students will be more likely to experience FI, use the food pantry, and experience social stigma related to food pantry use compared to U.S. citizen students.

CHAPTER TWO

REVIEW OF LITERATURE

This review of the literature provides an overview of FI, social stigma and the unique challenges facing the non-citizen university student population. The following sections discuss FI definitions, nutrition and health concerns, prevalence of FI, measurement tools of FI, the relationship between FI and citizenship status, and finally, the relationship between FI and social stigma.

Food Insecurity Overview

The United States Department of Agriculture (USDA) defines food security as the ability of an individual or household to acquire and maintain nutritionally adequate and safe food every day without resorting to alternative means (e.g. stealing or choosing low nutrition quality foods) (Coleman-Jensen, 2018). Food security can be measured and categorized into four domains: high food security, moderate food security, low food security and very low food security (Coleman-Jensen, 2018). Food *insecurity* (FI) occurs when an individual or household loses the ability to acquire nutritionally adequate and safe food (Coleman-Jensen, 2018). Low and very low food security are defined by the presence of hunger in addition to having limited access to food. Low food security is correlated with reduced quality of food, variety of food, and desirability to follow a healthful diet with little to no indications of reduced food intake (Coleman-Jensen, 2018). Very low food security often leads to disrupted eating patterns and reduced food intake because of insufficient money and other resources of food (Coleman-Jensen, 2018).

The U.S. Household Food Security Survey Module (HFSSM) is a validated 18-item survey that measures household food security. The HFSSM made it possible to build

the literature to measure prevalence and better understand food insecurity. Many versions of this food security measurement tool have been developed to assess food insecurity in various settings and research models/methodology (U.S. Department of Agriculture, 2000).

FI prevalence. In 2018, there were 14.3 million households in the United States who were food insecure. Of the 14.3 million households, 6.8 million experienced low food security and 4.3 million experienced very low food security (Coleman-Jensen, 2018). Fortunately, the food insecurity trend is declining every year (U.S. Department of Agriculture, 2019a).

The same decline in food insecurity was reported in New Jersey. In 2017, 9.6% of households in New Jersey reported experiencing some level of food insecurity, which is an incredible improvement from a prevalence of 13.5% in 2010 (Council, 2017). There are approximately 865,900 people living in food insecure households with Essex county having the highest prevalence of food insecure people at 130,720 individuals (Feeding America, 2017).

The top three risk factors that increase the likelihood of food insecurity include marital status (being single) with children, Black/non-Hispanic as well as Hispanic/Latinx, and income status below the poverty threshold (Coleman-Jensen, 2018). Other factors include low socioeconomic status, lack of food access, and negative psychosocial factors (Loring & Gerlach, 2015). Those with household incomes near or below the poverty line experienced higher rates of food insecurity compared to the national average (Coleman-Jensen, 2018). Households with children, single parents,

unemployed individuals, and/or disabled individuals are situational risk factors of both poverty and food insecurity (Coleman-Jensen, 2018; Furness, 2004).

Food insecurity increases the risk of nutrition deficiencies, development and progression of diseases, mental health problems, and decreased psychosocial health (Bahadur et al., 2018; Gundersen & Ziliak, 2015; Hartline-Grafton & Dean, 2017; Loring & Gerlach, 2015; Skalicky et al., 2006). In children, food insecurity increases the risk of birth defects, anemia, lower nutrient intake, and cognitive and behavior problems (Bahadur et al., 2018; Gundersen & Ziliak, 2015). These problems lead to a higher risk of hospitalization, asthma, depression, disordered eating patterns, and higher BMI later in life (Darling et al., 2017; Gundersen & Ziliak, 2015). In the adult population, food insecurity increases the risk of decreased nutrient intake, increased mental health problems, diabetes, hypertension, hyperlipidemia, poor sleep outcomes, and overall poor health (Gundersen & Ziliak, 2015). In the senior population, food insecurity increases the risk of lower nutrient intake, poor health, depression, and limited quality of life (Gundersen & Ziliak, 2015).

Food Insecurity and Citizenship Status

The literature is mixed regarding the prevalence of food insecurity by citizenship status. A study in 2017 found evidence that immigrants and U.S. citizens often experience similar rates of food insecurity (Ashbrook, 2017). A more recent study found that the rates of food insecurity were highest among the non-citizen immigrant population compared to naturalized immigrants and U.S. citizens (Altman, Heflin, & Patnaik, 2020). The results of these studies show that the relationship between food insecurity and

citizenship status is not entirely clear due to various terminologies used to describe the non-U.S. citizen population.

There are many immigration and visa statuses for non-U.S. citizens, and the existing literature often includes the important distinctions among these. Table 1 provides some definitions of the citizenship statuses to differentiate the terminology used by researchers and accurately define each citizenship term that will be used in this chapter. However, for the analyses presented later in this thesis, all non-US citizens are grouped together.

Table 1

Citizenship Status Definitions

| Citizenship Terminology | Definitions |
|-------------------------|---|
| Foreign national | A foreign-born, non-citizen, non-permanent resident who has been granted a temporary visa by the Immigration and Naturalization Service for a specific purpose, such as academic study, for a limited period. |
| Immigrant | A person who comes to live permanently in a foreign country. |
| Naturalization | The process by which U.S. citizenship is granted to a lawful permanent resident after meeting the requirements established by Congress in the Immigration and Nationality Act. |
| Naturalized immigrants | Permanent residents granted a U.S. citizenship, thus are considered U.S. citizens. |
| Non-citizen immigrants | All immigrants who are considered to be non-U.S. citizens, naturalized immigrants, or permanent residents. |
| Permanent resident | A foreign national that has been approved for permanent residence in the U.S. by the U.S. Department of State or Immigration and Naturalization Service. |
| Unauthorized immigrant | Foreign-born non-citizens who are not legal residents. |
| U.S. citizen | A person who is a citizen of the United States from birth or through naturalization. |

Source: (Rutgers Global, 2017b; U.S. Citizenship and Immigration Services, 2020; U.S. Department of State Bureau of Consular Affairs, 2020).

There are some factors that have been found to worsen food insecurity in immigrants. For naturalized immigrants, those who have spent less than 5 years in the U.S. experience more food insecurity than naturalized immigrants with 5 or more years in the U.S. (Altman et al., 2020). Similarly, non-citizen immigrants who spent less time in the U.S. experienced lower rates of food insecurity compared to those staying longer (Altman et al., 2020). Other factors that may lead to food insecurity include limited purchasing power, limited/lack of food access, limited/lack of education, policies related to food assistance programs restrictions, and fear of deportation (Altman et al., 2020; Potochnick, Chen, & Perreira, 2017; U.S. Department of Agriculture, 2019b; Wessler, 2011). Unauthorized immigrants were more likely to be in poverty because jobs that are available to them are mostly low wage, which limits their purchasing power (Wessler, 2011). Limited/lack of food access and education of food assistance programs also increases the risk of food insecurity among non-citizens (Food Research & Action Center, 2016). The relationship between policy, fear of deportation, and food insecurity will be expanded on later sections (see Social Stigma and Food Insecurity in Non-Citizens).

Food Insecurity in Higher Education

Food insecurity among college and university students has been increasingly studied over the past decade. The Hope Center Report documents the prevalence of FI in the higher education institutions across the nation in their annual report, the one that corresponds to the year the current study was conducted is from 2019 (Baker-Smith et al., 2020). Researchers used the 18-item HFSSM to measure FI among 123 two- and four-

year institutions across the United States. In two-year institutions, 48% of students reported experiencing FI within the past 30-days of taking the survey (Baker-Smith et al., 2020). In four-year institutions, 41% of students reported experiencing FI within the past 30-days of taking the survey (Baker-Smith et al., 2020). However, prevalence varied from 32% to 65% in two-year institutions and 19% to 65% in four-year institutions. They also identified race/ethnicity, grade level, and number of years in college as risk factors of food insecurity in this sample (Baker-Smith et al., 2020).

In addition, the study found differences in FI experiences among race, undergraduate/graduate levels, and preferences of food assistance programs. 58% of African American or black students experienced FI, which is 8% points higher than Hispanic/Latinx students and 19% points over white/Caucasian students (Baker-Smith et al., 2020). Undergraduate students were more FI than graduate students: 40% of first-year students were FI, while 48% of those three or more years into college were FI. (Baker-Smith et al., 2020; Broton & Goldrick-Rab, 2018; Broton & Weaver, 2018). Finally, they reported that most FI students do not use public assistance programs available to them (Baker-Smith et al., 2020). The national report concluded that FI is prevalent among college and university populations with some students at greater risk of FI, and most FI students do not use food assistance programs.

The relationship between FI and citizenship statuses is limited within the current literature. Demographic variables like race and ethnicity were observed to understand how FI affects international and non-citizen students. A few studies, however, reported significant differences among international students and non-international students (Baker-Smith et al., 2020; Benefield, Mann, Cafer, & Holben, 2018; Cuite et al., 2018; El

Zein et al., 2018; Soldavini, Berner, & Da Silva, 2019). While international students are all foreign-born individuals, different visas limit international student eligibilities for most food assistance programs, private and public loans, and federal financial aid (Department of Human Services, 2020; Education, 2019; U.S. Citizenship and Immigration Services, 2020). Currently, no studies have been conducted to support that the differences in citizenship eligibilities can lead to or be a factor of FI among college and university students.

Research by El Zein (2018) also noted that the “international student population has received little attention when discussing food insecurity despite being exposed to factors that increase their vulnerability to financial hardship.” Current studies categorize non-citizen students with U.S. citizens because they are currently living in the U.S. and did not come into the U.S. with a student visa or with international students because they are not equivalent to a U.S. citizenship status, thus are not represented well in the literature.

In 2018, it was reported that more than a third of Rutgers University New Brunswick (RU-NB) students were FI, with 36.9% of undergraduate students reported some level of FI (Cuite et al., 2018). The level of FI reported at RU-NB was similar to the most national recent estimates at four-year colleges (Baker-Smith et al., 2020). Like the studies cited above, Cuite and colleagues (2018) found that non-citizen RU-NB students were more likely to be food insecure.

Academic outcomes, student health, and FI. The literature often documents relationships between FI, poor health outcomes, and declining academic success of students (Allen & Alleman, 2019; Darling et al., 2017; Education Advisory Board, 2018;

Hickey, Shields, & Henning, 2019; Maroto, 2013; Raskind et al., 2019; Wall-Bassett et al., 2017). On a national level, FI students were more likely to drop a class and were 15 times more likely to fail (Education Advisory Board, 2018). Students often sacrificed academics to prioritize managing FI (Allen & Alleman, 2019). FI is correlated to lower grade point averages (GPA) within the student population (Hickey et al., 2019; Maroto, 2013). Researchers found other risks of FI among students include: increased stress, increased risk of obesity, disordered eating patterns, depression, and poor psychosocial health compared to their food secure students (Darling et al., 2017; Raskind et al., 2019; Wall-Bassett et al., 2017).

Food assistance programs for college students. Food assistance programs are great resources for students to manage FI while studying in a college or university. Federal programs are governed by the USDA under the Nutrition Assistance Programs. These programs include Food Distribution programs, Child Nutrition Programs, the Supplemental Nutrition Assistance Program (SNAP), Special Supplemental Nutrition Program for Women, Infants and Children (WIC), and the Senior Farmers Market Nutrition Program. Most programs available to college and university programs are non-entitlement programs, i.e., participants must opt-in and apply to use these programs. While the literature identifies SNAP as a potentially important resource for some college and university students, TEFAP, WIC and food pantries are other assistance programs available (Government Accountability Office, 2018).

The Supplemental Nutrition Assistance Program (SNAP) is an example of a resource that can be beneficial for students. SNAP provides food assistance to low income individuals and households by providing them benefits card that can be used in

most food retail stores and farmers markets (Department of Human Services, 2020).

SNAP benefits are limited for the purchase of only fruits, vegetables, proteins, dairy-products, and seeds/plants that produce food. SNAP benefits cannot be used to purchase non-food items, medicine, supplements, hot/ prepared food or meals (Department of Human Services, 2020). SNAP is considered a qualifier program for other food assistance programs like TEFAP and WIC (New Jersey Department of Agriculture, 2016). Qualifier programs allows those who are already taking part in the program to automatically be eligible for other food assistance programs.

Food assistance programs have been criticized for their stringent eligibility criteria for undergraduate students (Treisman, 2019). To qualify for NJ SNAP, recipients must be a U.S. citizen or a qualified alien resident and must meet a maximum income per household size requirement. Students aged 18 to 49 and are enrolled at least part-time in a college, university, or community college must meet the income eligibility in addition to one of eight other requirements (Department of Human Services, 2020).

In 2018, it was estimated that 57% of students at risk of FI and eligible for SNAP did not collect their benefits and only 20% of FI students received SNAP (Anderson & Goldrick-Rab, 2018). There is a lack of research on the prevalence of non-citizen student participants who are eligible for SNAP and why eligible student SNAP participation is low. The GAO reports some students are unaware, misinformed, and/or find that eligibility requirements are difficult to understand (Freudenberg et al., 2019; Payne-Sturges, Tjaden, Caldeira, Vincent, & Arria, 2018). Some argue that stigma in addition to the application process, misinformation, and eligibility requirements can deter students from participation in SNAP (Baker-Smith et al., 2020; El Zein et al., 2018; Government

Accountability Office, 2018; Henry, 2017; Hickey et al., 2019). Overall, SNAP has been found to be a beneficial resource for students in higher education (Freudenberg et al., 2019; Government Accountability Office, 2018; Payne-Sturges et al., 2018).

Social Stigma and Food Insecurity

Food insecurity stigma comprise the feelings of shame, the embarrassment associated with food insecurity, and the perceived/ anticipated negative consequences of food insecurity (Palar et al., 2018). Within the literature on stigma and FI, studies measuring the relationship is limited but is often mentioned as an important problem to address; studies try to address how stigma affects food assistance program use, but do not measure and compare how much stigma is perceived; and finally, the relationship between FI and stigma in FI populations irrespective of specific disease states, disabilities, culture, gender, and race have not been explored.

There are multiple definitions and measures of social stigma because of numerous multidisciplinary applications observed in very diverse populations (Fox, Earnshaw, Taverna, & Vogt, 2018; Link & Phelan, 2001). This review defines social stigma as the co-occurrence of labelling, stereotyping, separation, status loss, and discrimination in a situation where power is exercised (Link & Phelan, 2001). While this definition has been used to describe stigma experienced by those with mental disorders, chronic illness, and disabled populations, it also can serve as a common definition that allows us to identify traits of stigma that students may experience.

The Mental Illness Stigma Framework (MISF) provides a common framework for terminologies and mechanisms of mental illness stigma by analyzing 400 stigma

measures (Fox et al., 2018). The main constructs include stereotypes, prejudice, discrimination, experience stigma, perceived stigma, anticipated stigma, and internalized stigma (Fox et al., 2018).

An example of a social stigma scale is the Stigma Scale for Chronic Illnesses is a common 8-item survey measuring stigma related to illness (Molina, Choi, Cella, & Rao, 2013). The SSQ items include “I felt embarrassed about my illness,” “Because of my illness, I felt left out of things,” “Some people acted as though it was my fault I have this illness,” and “I felt embarrassed because of my physical limitations” (Molina et al., 2013). Constructs explored in the study included identity and treatment stigma which were similar to internalized stigma and anticipated stigma (Fox et al., 2018; Molina et al., 2013). To simplify social stigma terminologies, a relevant study that explored means-tested government programs (e.g., SNAP) identified identity and treatment stigma among food assistance users (Stuber & Schlesinger, 2006). The constructs of identity and treatment stigma will be used as examples to help examine and describe stigma in FI studies.

Identity stigma describes the embarrassment and shame people experience when they accept an unwanted negative trait leading to stereotyping, labelling and status loss. For example, Studies have found that parents felt shame, embarrassment, and fear of using food assistance programs because it is associated with failed parenting and failing to provide for their family (Fram, Frongillo, Fishbein, & Burke, 2014; Purdam, Garratt, & Esmail, 2016). In addition to the negative perceptions associated with food assistance programs, food insecurity can lead to internalized shame, frustration, mistrust, and sense of hopelessness (Bublitz et al., 2019; Zepeda, 2018).

Treatment stigma describes the anxiety and fear of being treated poorly by others in their community leading to separation and discrimination. For example, a 2019 study found that food assistance program users felt devalued and judged by county assistance offices, SNAP caseworkers, grocery store clerks, and grocery store patrons for applying and using food stamps (Gaines-Turner, Simmons, & Chilton, 2019). These findings may suggest that internalized negative beliefs of food insecurity and negative perceptions of food assistance programs are externalized to public perceptions, further discouraging the use of food assistance programs and can act as a barrier to food security.

Social Stigma and Food Insecurity in Non-Citizens

The following section describes an overview of the *public charge rules*, how social stigma may be consequential to policies, and how other aspects of society, like culture, accentuates social stigma in FI non-citizen populations.

A major policy barrier in the non-citizen population include the public charge rules (Vignola, Ruiz-Navarro, & Freudenberg, 2018). Public charge rules denies permanent resident status to lawful immigrants if they use federal assistance programs (U.S. Department of Homeland Security, 2019). Public benefits include affordable housing, home heating assistance, health coverage, nutrition assistance, earned income tax credit, and other anti-poverty programs (U.S. Department of Homeland Security, 2019).

Treatment stigma may be a result of the public charge rules. For example, a 2018 study found one in seven immigrant families (regardless of having a green card) reported not using public benefits due to fear of losing their permanent resident status or

deportation (Bernstein, 2019; Perez-Jimenez & Freudenberg, 2016; Vignola et al., 2018) (Potochnick et al., 2017). The public charge rules allow permanent residency only to lawful immigrants who will not be “dependent” on federal programs. However, in addition to the pre-existing social stigma associated with federal assistance programs, the policy consequently created negative associations to immigrants who use and benefit from assistance programs. In addition, the fear of deportation decreases mobility and use of food assistance programs to prevent being identified as immigrants/non-citizens (Potochnick et al., 2017).

Identity stigma can be presented in culture as well. Non-citizen immigrants may traditionally think that food assistance programs are intended for those in greater need or impoverished (Perez-Jimenez & Freudenberg, 2016; Vignola et al., 2018). Depending on the country and culture, some stereotypes label food insecurity as shameful and deemed unacceptable related to family and/or cultural standards (Vignola et al., 2018). For some, immigrating into the U.S. is a privilege and a symbol for prosperity. Thus, being FI in the United States can lead to shame and embarrassment because it is associated with poverty and compromises their cultural standards of success (Edwards, 2019).

Social Stigma and FI among non-citizen students. Few studies are available that explore the relationship between FI and social stigma in the non-citizen *student* population. A few studies report social stigma is common in international students; and international status is predictive of food pantry use, FI, and financial hardships (El Zein et al., 2018; Henry, 2017). These findings may suggest that the level of stigma in this population may not be severe enough to prevent the use of food pantries. Identity stigma can occur when students report feeling isolated because they are different from other

American students and their peers (Zhou, Frey, & Bang, 2011). These findings may explain how increased social capital for international students can lead to lower levels of acculturative stress, higher academic performances, and increased employability in the future (Poyrazli & Grahame, 2007; Tran & Pham, 2016). In addition, it may also explain why some students report preferences for receiving free food from clubs and other school events rather than going to the food pantry because clubs are intended for students rather than specifically food insecure people (i.e. less stigma is experienced), free food is available (i.e. they are more food secure), and finally, they are able to build relationships (i.e. improve social capital) (Henry, 2017).

Conclusion

Disparities among different student populations are becoming clearer as the literature on food insecurity continues to grow. More attention is being given to understanding the effects of food insecurity among the growing number of non-citizen and international students in colleges and universities because there are clear differences in experiences compared to the general U.S. student population. In addition, the relationship between social stigma and food insecurity must be thoroughly explored, as stigma poses as an invisible barrier, discouraging the use of food assistance programs developed for those in need. Food insecurity stigma must be better understood to promote the wellness and success of all students.

CHAPTER THREE

METHODOLOGY

This study employed a cross-sectional online survey to understand the relationship between food insecurity, food pantry use, social stigma and citizenship at RU-NB.

Survey Instrument

The Rutgers Student Quality of Life Survey includes the consent form, measures of food security, housing security, and homelessness, as well as items tailored to the specifics of RU-NB. See Appendix A for the consent form. The part of the survey measuring food security can be found Appendix B. The Hope Center 2019 instrument was used as a model and was adapted here (Baker-Smith et al., 2020). This allows us to better compare our findings to national-level results. The research team developed other items to better understand the experiences of students related to the Rutgers Student Food Pantry (RSFP). The following section provides an in-depth description of the survey instrument and how each variable is measured.

The survey included the validated USDA 18-item Household Food Security Survey to measure food insecurity (Coleman-Jensen, 2018). Items include “In the last 30 days, were you ever hungry but didn’t eat because there wasn’t enough money for food,” and “I worried whether my food would run out before I got money to buy more.” There were additional questions for those who responded affirmatively to “Do you have any biological, adopted, step or foster children who live in your household?” and different scoring was used, per the USDA. Those with children were scored on a 0 to 18 scale: a score of 0 indicates high food security, 1 to 2 indicates marginal food security, 3 to 7

indicates low food security, and finally, 8 to 18 indicates very low food security. Those without children were scored on a 0-10 scale: a score of 0 indicates high food security, 1 to 2 indicates marginal food security, 3 to 5 indicates low food security, and finally, 6 to 10 indicates very low food security. In all cases, high and marginal are considered “food secure,” while low and very low are considered “food insecure.”

To reduce participant burden, only students who reported marginal to very low food security and report having heard of the RSFP were asked a series of questions related to the RSFP and social stigma. These are found in the middle of the survey and included questions like “I am concerned about the confidentiality of the Rutgers Student Food Pantry” and “I am afraid one of my peers or classmates will see me using the Rutgers Student Food Pantry” (See [Appendix C](#) the complete RSFPE items). Participants responded to food insecurity stigma related items using a 3-point Likert-type scale, ranging from 1 = “strongly disagree,” 2 = “somewhat agree,” and 3 = “strongly agree.”

The rest of the survey measured living arrangements, housing insecurity and homelessness, as well as financing education and use of other federal assistance programs. An additional open-ended question was included at the end of the survey regarding any additional experiences related to food insecurity or housing insecurity participants want to address. Students were able to provide comments on their experiences with food insecurity, food pantries, and other related topics.

Procedure

A senior administrator distributed a link to the web-based survey via Rutgers student listserv that includes all students attending RU-NB during the fall semester of 2019. An initial email and three weekly follow-up emails were sent. See Figure 1 for a

flyer used to advertise the survey. The survey was available from November 20th through December 18, 2019. A lottery for a chance to win one of ten \$100 gift cards was used to incentivize students to complete the survey. The university's Institutional Review Board (IRB) approved the study.

Figure 1

Rutgers Quality of Life Survey Poster



Participants completed informed consent at the start of the survey (see Appendix A for the full details of the consent). This form gave permission to the Office of Institutional Research and Academic Planning (OIRAP) to connect the survey responses to other demographic and school-related data using their student ID number. These include year in school, major, school, part-time/full-time status, GPA, gender, age, ethnicity, citizenship, and military status. A full list of the information retrieved from

participants are listed in the consent form. Data were de-identified by OIRAP staff before being provided to the project investigators.

Participants and Sample Description

A total of 6,129 graduate and undergraduate students completed the survey. Because graduate and undergraduate students are very different and are not recommended to be analyzed together by the Rutgers Office of Institutional Research, only undergraduate student data will be included in this thesis.

A total of 5,063 undergraduate students completed the survey, resulting in a 14.5% response rate. We received measures of gender, race, degree level, year in school, major, part-/full-time status, military status, parent's education level, and citizenship status from the university database. Some data, like GPA, may not be applicable for first-year students. Citizenship status was categorized as U.S. citizen and non-U.S. citizen, and all foreign national and permanent resident students were considered non-U.S. citizens.

Data Analysis

Statistical Package for the Social Sciences (SPSS) version 26 was used to conduct all statistical analyses (IBM Corp, 2019). OIRAP conducted chi-square tests to determine sample representativeness of the larger student body using the demographic data. These analyses are included in Appendix D.

Descriptive statistics were used to describe the prevalence of food insecurity among the undergraduate participants, food pantry use, the items on the RSFP Experience Scale, and citizenship status. Chi-square tests of independence were performed to examine the relationship of citizenship status with the prevalence of food insecurity and food pantry use.

Exploratory factor analysis using principal axis factor method was used to identify independent factors in the RSFP Experience Scale. The factors extracted from the factor analysis were used to create subscales, and Cronbach's alpha was used to test the internal consistency of those subscales. Finally, a t-test was conducted to compare the mean score of each factor by citizenship group (U.S. citizen and non-U.S. citizen) (Field, 2013).

CHAPTER FOUR

RESULTS

The results section first presents an overview of the sample, and then is organized by research question.

Sample Demographics

The sample (N=6,129) included more female (64.4%) than male (35.6%) participants. Racial demographics included White (38.9%), Asian American (36.6%), Hispanic (12.4%), African American (5.6%), one American Indian student, two or more races (4.1%), and other (0.8%). In terms of citizenship, 88.3% of students were U.S. citizens, and 11.7% were non-U.S. citizens. In terms of class year, 30.8% were first-year students, 24.5 % Sophomores, 21.7% Juniors, and 23.0% Seniors. Students in this sample were mostly full-time students (97.9%). The age of the participants ranges from 18 to 63 years old with the mean age being 20 years old.

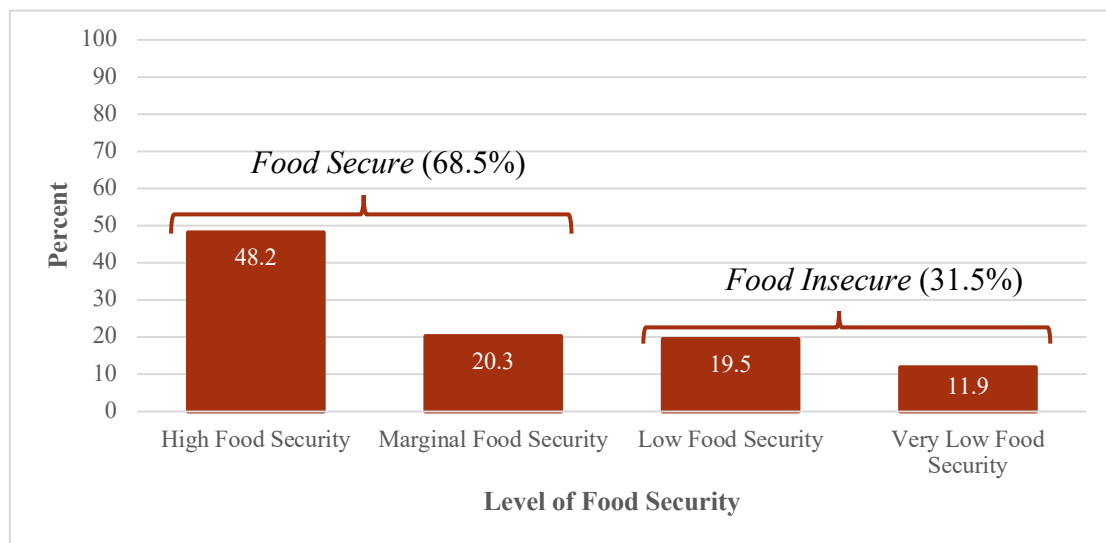
The representativeness analysis found that the sample is largely representative of the Rutgers University student population. All subgroups were statistically ($p < 0.05$) different with a Cramer's V of less than .10, which indicates a small/weak effect (Akoglu, 2018). Specifically, the response rates for foreign national (9.6%) and permanent resident (12.2%) undergraduate students were significantly lower than for U.S. citizens (15.2%). However, the Cramer's V was .05, indicating a small effect (Akoglu, 2018).

RQ 1: What is the prevalence of food insecurity among RU-NB undergraduate students?

As mentioned above, the USDA categorizes those who report low food security and very low food security as food *insecure* (FI), while high and marginal are considered food secure. Of the 5,063 undergraduate students who completed the survey, 116 students were missing responses for at least one of the food insecurity items and were not included in the food insecurity analysis. Of the included students (n=4,944), 68.5% reported being food secure, while 31.4% reported being FI. The breakdown by food security levels is shown in Figure 2.

Figure 2

Prevalence of Food Insecurity Among Undergraduate Students



Note: n = 4,944

RQ 1a: Does the prevalence of food insecurity vary by citizenship status?

A chi-square test of independence was conducted to determine if there was a statistically significant relationship between FI and citizenship status among undergraduate students. The relationship between level of food security and citizenship

status was statistically significant, $\chi^2(2, N = 4,944) = 10.459, p = .001$. Significantly more U.S. citizen students were food secure (69.3%) compared to non-U.S. citizen students (62.6%) (see Table 2 for the results).

Table 2

Food Security and Citizenship Status

| Level of food security | Citizenship status | | χ^2 (<i>p</i> -value) |
|-------------------------|--------------------|------------------|--------------------------------|
| | U.S. citizen | Non-U.S. citizen | |
| Food secure (n=3,389) | 69.3% | 62.6% | 10.46 |
| Food insecure (n=1,555) | 30.7% | 37.4% | (<i>p</i> =0.001) |

Note: n=4,944, there were 3 missing cases for citizenship status and 116 missing cases for level of food insecurity.

RQ 2: What is the prevalence of use of the Rutgers Student Food Pantry?

Overall, 69.2% of undergraduate students reported having heard of the RSFP.

Students who reported having heard of the RSFP (n=3,241) were asked if they had received food from the RSFP (see Table 3 for the results of food pantry use by citizenship status). Table 2 indicates that 4.1% of all participants who had heard of the RSFP had received food from the RSFP. This corresponds to 2.6% of all undergraduates completing the survey when including those who have not heard of the RSFP.

Table 3

Citizenship Status and Food Pantry Use

| Have you ever received food from the RSFP? | Total (n=3,224) | Citizenship status | | χ^2 (<i>p</i> -value) |
|--|--------------------|---------------------------|-----------------------------|--------------------------------|
| | | U.S. citizen (n=2,957) | Non-U.S. citizen (n=267) | |
| Yes (n=132) | 4.1% | 3.70% | 8.60% | 23.85 |
| No (n=3,092) | 95.9% | 96.30% | 91.4 % | (<i>p</i> =0.001) |

We also found that 3.5% of all undergraduates report having used an off-campus food pantry than the on-campus RSFP, and significantly more food insecure students used an off-campus food pantry (6.5%) than food secure students (2.2%) ($\chi^2(1, N = 5,511) = 62.027, p = <.001$).

RQ 2a: Does Rutgers Student Food Pantry use vary by citizenship status?

A chi-square test of independence was conducted to investigate RSFP use by citizenship status. While actual use represents a small percentage across all the citizenship groups, there were significant differences across groups ($\chi^2(2, N = 3,224) = 23.853, p = <.001$). While only a minority of students overall had used the RSFP, significantly more non-U.S. citizen students received food from the RSFP (8.6%) compared to U.S. citizen students (3.7%).

We found a similar pattern with off-campus pantry use, where non-citizen undergraduate students were more likely to use them (10.7%) than U.S. citizen undergraduate students (2.1%) ($\chi^2(2, N = 4,540) = 112.080, p = <.001$).

RQ 3: Is there social stigma regarding use of the Rutgers Student Food Pantry among food insecure undergraduate students?

Undergraduate students who reported marginal, low, or very low food security and had heard of the RSFP were asked about the “RSFP Experience” using a 13-item 3-point Likert-type scale, shown in Appendix C. Only students who reported less than “high” food security and had heard of the RSFP were included (n=2,260 students; the results of the frequencies are shown on Table 4).

Table 4

The Rutgers Student Food Pantry Experience Frequencies

| RSFP Experience Items | Strongly agree % | Somewhat agree % | Do not agree at all % |
|--|------------------|------------------|-----------------------|
| I believe that if a student needs help, they should use the Rutgers Student Food Pantry. (n = 2,255) | 78.8 | 18.8 | 2.4 |
| I feel that other students need the Rutgers Student Food Pantry more than I do. (n = 2,258) | 72.0 | 23.8 | 4.2 |
| I would only use the Rutgers Student Food Pantry if I was completely without food. (n = 2,257) | 58.9 | 32.1 | 9.0 |
| I understand what the Rutgers Student Food Pantry does. (n = 2,260) | 42.5 | 42.6 | 14.9 |
| The Rutgers Student Food Pantry is worth the effort to visit. (n = 2,252) | 38.3 | 53 | 8.7 |
| I feel that there is a stigma attached to the Rutgers Student Food Pantry. (n = 2,250) | 25.1 | 45.9 | 29.0 |
| It is easy for me to get to the Rutgers Student Food Pantry location. (n = 2,245) | 19.3 | 56.9 | 23.8 |
| The Rutgers Student Food Pantry has convenient hours. (n = 2,237) | 17.9 | 72.4 | 9.7 |
| I am embarrassed to use the Rutgers Student Food Pantry. (n = 2,252) | 15.7 | 36.9 | 47.4 |
| I am afraid one of my peers or classmates will see me using the Rutgers Student Food Pantry. (n = 2,255) | 15.6 | 32.5 | 51.9 |
| The Rutgers Student Food Pantry is a resource intended for me. (n = 2,256) | 12.6 | 38.3 | 49.1 |
| I am concerned about the confidentiality of the Rutgers Student Food Pantry. (n = 2,251) | 12.2 | 37.6 | 50.2 |
| I have a friend that uses the Rutgers Student Food Pantry. (n = 2,260) | 9.8 | 14.8 | 75.4 |

Note: n=2,260. Items only presented to marginal, low or very low food secure students and students who have heard of the RSFP. Order of items was randomized for respondents.

Of all the items on the RSFP Experience Scale, the most strongly endorsed statement was “I believe that if a student needs help, they should use the RSFP.”

Approximately half of respondents do not agree at all with the statements “I am afraid one of my peers or classmates will see me using the Rutgers Student Food Pantry,” “I am concerned about the confidentiality of the Rutgers Student Food Pantry,” “The Rutgers Student Food Pantry is a resource intended for me,” and “I am embarrassed to use the Rutgers Student Food Pantry.” Over three out of four respondents do not agree at all with the statement “I have a friend that uses the Rutgers Student Food Pantry,” making up the largest percentage. Finally, one in four students reported they strongly agree that stigma is attached to the RSFP, while a third strongly disagree, and about half (45.9%) somewhat agree.

Factor analysis of food pantry use stigma.

Exploratory factor analysis was conducted to better understand the RSFP experiences questionnaire and FI undergraduate students’ experiences of social stigma associated with the RSFP. Bartlett’s test of sphericity, the scree plot test, total variance explained, factor loading criteria, rotation method, and the rotated component matrix results are reported below.

Principal factor analysis. Exploratory factor analysis (EFA) was conducted to measure the RSFP Experience. More specifically, the principal axis factor (PAF) method was used due to its ability to optimize the communalities of all existing factors, i.e., proportion of variance that is shared with other factors, in order to be able to extract the underlying/latent factors with the most influence (Akhtar-Danesh, 2017). Students who were food insecure, were at risk of food insecurity, and have heard of the RSFP were included for analysis (n= 2,260). The criteria that determines the appropriateness of using

factor analysis are as follows: the Kaiser-Meyer-Olkin (KMO) test, the Bartlett's test of sphericity, the extraction method, the rotation method used, and the factor loading range (Williams, Onsman, & Brown, 2012). The Kaiser-Mayer-Olkin test measures the adequacy of using factor analysis. KMO values between .60 to 1.00 are considered acceptable (Williams et al., 2012). The KMO result is .766 indicating an adequate score to conduct EFA (Williams et al., 2012).

Bartlett's test of sphericity. The Bartlett's test of sphericity checks for redundancy between the correlation matrix and identity matrix to verify that data reduction can be analyzed (Williams et al., 2012). The Bartlett's test of sphericity result is as follows: $\chi^2 (78, N = 4,688) = 5,957.01, p = < .001$. This indicates that the test was significant, thus the scree plot test can be analyzed (Williams et al., 2012).

Number of factors. The number of factors was determined by using the Kaiser method, in which factors must meet a threshold eigenvalue of 1 or above (Kaiser, 1960). This approach indicates a three-factor structure, as Table 5 indicates that the fourth factor fails to meet this threshold.

Table 5

Total Variance Explained

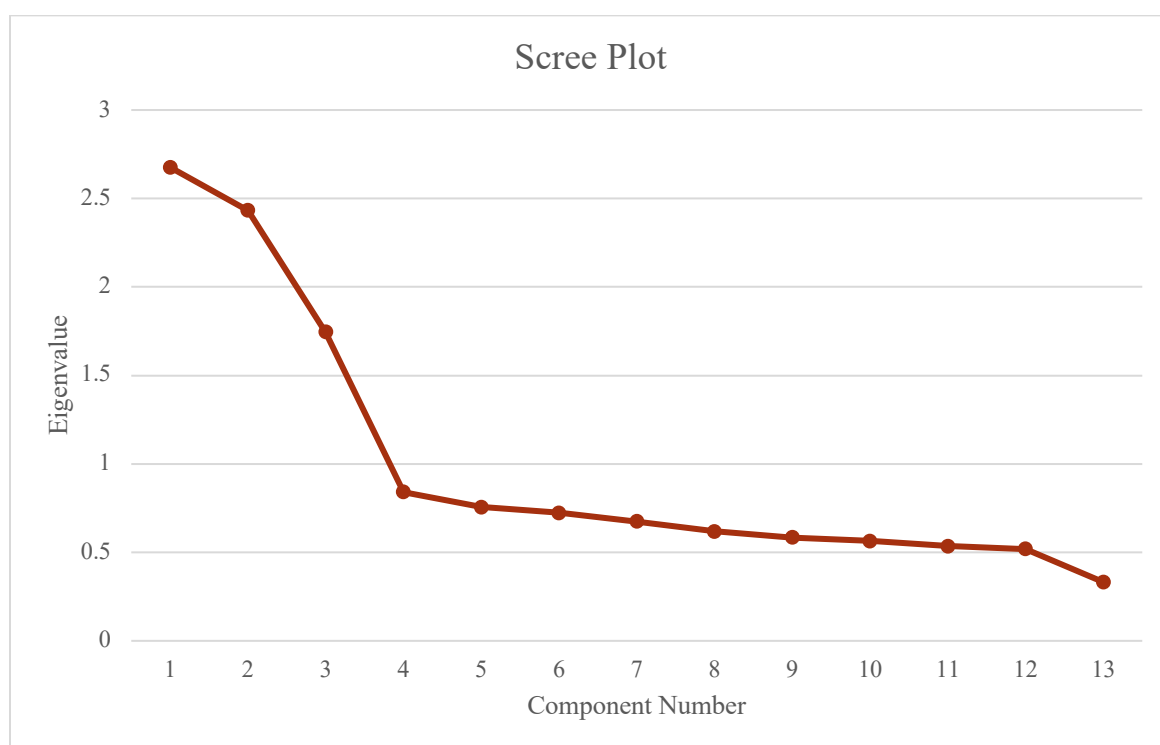
| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | | Rotation Sums of Squared Loadings | | |
|--------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|-----------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 2.68 | 20.59 | 20.59 | 2.16 | 16.61 | 16.61 | 2.09 | 16.10 | 16.10 |
| 2 | 2.43 | 18.71 | 39.29 | 1.82 | 14.02 | 30.63 | 1.65 | 12.71 | 28.81 |
| 3 | 1.75 | 13.42 | 52.71 | 1.10 | 8.47 | 39.10 | 1.34 | 10.29 | 39.10 |
| 4 | 0.84 | 6.46 | 59.18 | 0.84 | 6.46 | 59.18 | 1.26 | 9.69 | 59.18 |

Extraction Method: Principal Component Analysis.

Alternatively, a scree plot test can be used to determine the number of significant factors extracted. While the scree plot test indicates a structure with four factors, this is not surprising as the Kaiser method has been found to result in fewer factors (Kaiser, 1960; Zwick & Velicer, 1986). See Figure 3 for the results of the Scree Test. The rotated factor matrix using four factors indicate only one item is significantly correlated with the fourth factor, thus for the purposes of this study, three factors will be used.

Figure 3

Scree Plot



Next, the total variance explained (displayed on Table 5) describes the number of extracted factors and the change in variance within each factor accounted for. The three factors extracted explain nearly 39.1% of the variance.

Factor loading. The factor loading criteria is based on the magnitude, and the range determine if each loading is significant. The minimum loading value that is widely used is 0.32, thus all loadings less than the minimum are not statistically significant and are not presented in Table 6 (Cabrera-Nguyen, 2010; Costello & Osborne, 2005; Yong & Pearce, 2013).

Varimax rotation. Orthogonal rotations produce factors that are uncorrelated (Costello & Osborne, 2005). A varimax rotation was conducted to better analyze the data because it minimizes the number of variables that have high loadings on each factor (Yong & Pearce, 2013). After analyzing the component correlation matrix, it indicated that no value exceeded 0.32, suggesting that an oblique rotation was not appropriate, and an orthogonal rotation (i.e. Varimax) rotation is appropriate for this data (Cabrera-Nguyen, 2010).

The rotated component matrix and factor analysis. The Rotated Component Matrix describes estimated correlations between each of the RSFP Experience items and how they load into each of the factors. The first included the items “I am afraid one of my peers or classmates will see me using the RSFP,” “I am embarrassed to use the RSFP,” “I am concerned about the confidentiality of the RSFP,” and “I feel that there is a stigma associated with the Rutgers Student Food Pantry.” Thus, the first factor was termed *Food Pantry Use Stigma*.

Next, six items loaded onto the second factor which was termed *Convenience and Accessibility of the RSFP*. Finally, three items loaded on the third factor, all of which were termed *Needs-Based Use of the RSFP*. The following three items reflected the idea that the greater the need a student has, the more likely they would use the RSFP. Thus,

the RSFP Experience consists of *Food Pantry Use Stigma*, *Convenience and Accessibility*, and the *Needs-Based Use*. See Table 6 for the Rotated Component Matrix for the full list of items and how well each item load into each factor.

Table 6

Rotated Factor Matrix^a

| | Factor | | |
|--|--------|------|------|
| | 1 | 2 | 3 |
| I am afraid one of my peers or classmates will see me using the Rutgers Student Food Pantry. | .812 | | |
| I am embarrassed to use the Rutgers Student Food Pantry. | .781 | | |
| I am concerned about the confidentiality of the Rutgers Student Food Pantry. | .640 | | |
| I feel that there is a stigma attached to using the Rutgers Student Food Pantry. | .579 | | |
| It is easy for me to get to the Rutgers Student Food Pantry location. | | .604 | |
| The Rutgers Student Food Pantry is worth the effort to visit. | | .544 | |
| The Rutgers Student Food Pantry has convenient hours. | | .522 | |
| I understand what the Rutgers Student Food Pantry does. | | .490 | |
| The Rutgers Student Food Pantry is a resource intended for me. | | .437 | |
| I have a friend that uses the Rutgers Student Food Pantry. | | .425 | |
| I feel that other students need the Rutgers Student Food Pantry more than I do.* | | | .704 |
| I believe that if a student needs help, they should use the Rutgers Student Food Pantry. | | | .529 |
| I would only use the Rutgers Student Food Pantry if I was completely without food. | | | .480 |

Note: n=2,260. Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

*Item was reverse coded to reflect the factor.

The three factors extracted were converted into subscales to quantitatively measure the qualities of the RSFP Experience. The three-point Likert-type questions were combined into an additive scale, i.e., a score of three equates to “strongly agree,” a score

of two equates to “somewhat agree,” and a score of one equates to “do not agree at all.” This suggests for example, a higher score on the FPU (food pantry use) Stigma Subscale indicates greater experiences of stigma. The item, “I feel that other students need the RSFP more than I do,” was reverse coded to reflect the Needs-based Use factor, i.e., a score of three equates to “do not agree at all,” a score of two equates to “somewhat agree,” and a score of one equates to “strongly agree.” This suggests that a student who strongly agree to the item needs the RSFP less compared to other students, thus are less likely to use the RSFP.

The number of items in each factor determine the range of the subscale. For example, the lowest and highest score for a Needs-Based Use Subscale will be three and nine, respectively. The value of lowest score was the subtracted from the lowest/highest scores to create a 0 to 6 range (See Table 8 for the ranges and means by citizen group of each subscale). The FPU Stigma subscale was found to be the most reliable subscale with Cronbach’s alpha of 0.79 (Field, 2013). The C&A scale had Cronbach’s alpha of .65 and the NBU scale had an alpha of .59, indicating lower reliability.

RQ 3a: Does RSFP Experiences differ by citizenship status?

Three one-way between subjects ANOVAs were conducted to compare the effects of citizenship status on food pantry use stigma, convenience and accessibility, and need-based use (see Table 7 for the results). There was a significant effect of FPU Stigma on food insecure students for U.S. citizen students and non-U.S. citizen students ($F(1, 2,230) = 11.985, p < .001$). However, difference in citizenship on the Convenience and Accessibility and Needs-Based Use subscales were not statistically significant.

Table 7

Average Scores in RSFP Experience Subscales by Citizenship Group

| Subscale | Range | Total Mean (SD) | Citizenship status | | <i>F</i> (<i>df</i>) | <i>p</i> -value |
|-------------------------------------|-------|-----------------------|---------------------------------|-----------------------------------|------------------------|-----------------|
| | | | U.S. citizen Mean (SD) | Non-U.S.- citizen Mean (SD) | | |
| FPU Stigma | 0-8 | 2.90 (2.27) | 2.83 (2.29) | 3.32 (2.11) | 11.99 (1, 2,230) | <i>p</i> =0.001 |
| Convenience and Accessibility | 0-12 | 5.60 (2.33) | 5.60 (2.31) | 5.56 (2.45) | 0.99 (1, 2,215) | ns |
| Needs-Based Use | 0-6 | 3.58 (0.83) | 3.59 (0.82) | 3.51 (0.92) | 0.87 (1, 2,239) | ns |

CHAPTER FIVE

DISCUSSION, RECOMMENDATIONS, AND CONCLUSIONS

In this chapter, the study findings, including rates of food insecurity and food pantry use are described. The newly developed RSFP Experience Scale, as well as the resulting subscales are also discussed. Further discussion on how the FPU Stigma subscale can provide insight on food insecurity and food pantry use among undergraduate students at RU-NB will be discussed followed by limitations of the study and considerations for future research.

Food insecurity among RU-NB undergraduate students and variation by citizenship status

Almost one-in-three (31%) RU-NB undergraduates reported being food insecure. The findings are similar to the 2016 RU-NB food insecurity study, which found a food insecurity rate among Rutgers undergraduates of 36.9% (Cuite et al., 2018). However, this level of food insecurity is lower than the estimated prevalence found at one large study of four-year institutions, (41%) (Baker-Smith et al., 2020), which provides the best national-level comparison.

Additionally, we found that non-U.S. citizen undergraduate students were more likely to be food insecure compared to U.S. citizen students. These findings are consistent with the results of the 2016 Rutgers University New Brunswick Food Insecurity Survey (Cuite et al., 2020). The findings also support those of other studies that have noted international students experience more food insecurity than non-international students and are at greater risk of food insecurity because they experience greater financial hardships (Baker-Smith et al., 2020; El Zein et al., 2018).

Non-U.S. citizen and international students may experience more food insecurity because they are at a greater financial disadvantage compared to in-state students with lower costs of education. For students living outside of New Jersey, tuition costs are 2.37 times greater than in-state students (Rutgers University New Brunswick, 2020). In addition, non-U.S. citizen students may experience employment restrictions due to visa, ineligibility for federal financial aid, and ineligibilities for federal and private loans without a U.S. citizen/permanent resident cosigner, plus they have to deal with fluctuations in exchange rates (CAPPEX, 2020; U.S. Citizenship and Immigration Services, 2020; XE, 2020).

In the open-ended response section, students had the chance to voice their concerns regarding their experiences at Rutgers University New Brunswick. Many of the responses reflect the realities described in the paragraph above. For example, one student wrote,

“I am an international student without any financial aid. It kills me to realize that my parents and relatives are putting in the majority of their savings for my education. The worst part is that I cannot do anything about it. I might take up a student loan in the future. The financial burden is massive [...] every time I buy food, I convert the price to INR and I often feel bad about spending so much over food.”

This example shows how the costs of education and the lack of access to financial assistance may conflict with the costs of food which may lead to the increased prevalence of food insecurity in the non-U.S. citizen student population.

Prevalence of use of the RSFP by RU-NB undergraduate students and variation by citizenship status

Of all the undergraduate students surveyed who had heard of the RSFP, fewer than one-in-20 reported having used it (4.1%). A similar number of undergraduates reported using off-campus food pantry participation (3.1% of all survey respondents).

The prevalence of use of the RSFP does vary by citizenship status. Non-U.S. citizen students (8.6%) were two times more likely to use the RSFP than U.S. citizen students (3.7%). Similarly, non-U.S. citizen students were even more likely to report having used off-campus food pantries compared to U.S. citizens (10.7% vs. 2.1%, respectively). It is likely that more non-U.S. citizen undergraduate students used these resources due to their higher rate of food insecurity. However, it is worth noting that the majority of food insecure students, of any citizenship status, do not report using the RSFP or off-campus food pantries. Given the prevalence of student food insecurity and low rates of student pantry use, the RSFP may be an underutilized resource.

The finding that non-U.S. citizens are more at risk for food insecurity supports El Zein's findings that international status is predictive of food pantry use and the food insecurity is higher in this population than both U.S. and out-of-state students (El Zein et al., 2018).

It is also important to note that some student's open-ended responses may indicate how different perceptions of the food pantry may affect food pantry use. A student wrote,

“I would like to go to the pantry. I just feel so embarrassed that I am an older student, and I cannot provide enough for my family with my part time job. I always justify it by saying other people need it more than I do.”

This quote highlights a common theme that students justify other's needs outweigh their needs. Another student wrote,

“I always feel like even though I'm struggling, there have to be people having a harder time than me. I don't want to use the food pantry because I don't want to take resources from people who need it more. I don't want to ask my parents for money because they need it, but they would be ashamed if they knew I was using the food pantry.”

In addition to devaluing their own needs, another factor that may affect food pantry use includes social standards expressed by both students. The first student relates food pantry use to failing the social standards of a parent figure. While the other relates food pantry use to failing the social standards of independency while in college in addition to the shame their family may experience.

Differences in social standards may differ more in non-U.S. citizen and international students as they may arrive from other countries with different knowledge, understanding, and attitudes towards food pantry use and food insecurity. Thus, it is important to identify and measure factors that influence the experiences of students related to food pantry use.

Food pantry use stigma regarding the use of the RSFP and variation by citizenship status

Principal axis factor analysis was conducted on the RSFPE Scale. This identified three factors: Food Pantry Use Stigma, Convenience and Accessibility, and finally, Needs-Based Use. These factors explained 39.1% of the variance in the scale, with the food pantry use stigma factor explaining the largest percentage, at over 15%. Each factor

was converted into subscales used to determine the existence of social stigma, to determine the influence of each item in the undergraduate student population by calculating the scores of each subscale, and finally, to compare the influence of each item by citizenship status.

Many students reported feeling social stigma regarding use of the RSFP. For example, the majority endorsed item of the FPU Stigma Subscale is “I feel that there is a stigma attached to the Rutgers Student Food Pantry,” with almost three-in-four student agreeing. Approximately 50% endorsed the other stigma items, indicating that at least half see stigma as an issue. Additionally, FPU Stigma was the only subscale that was significantly different between the scores of each citizenship group, where significantly more undergraduate RU-NB non-U.S. citizen students agreeing with the food pantry use stigma compared to U.S. citizen students.

The Convenience and Accessibility Subscale indicates that the hours, location and other elements of the pantry logistics are seen as barriers to pantry use as well. The RSFP has been working to address this, both before and during the pandemic, including creating a mobile pantry since this survey was conducted.

The themes of each subscale are reflected in the open-ended responses. One RU-NB student wrote, “There is [*sic*] a lot of people who are going hungry in college and the stigma that goes with visiting the food pantry makes it difficult to visit and hence they just stay hungry.” Another student described food pantry use stigma as well as an expression of the Needs-Based Use factor, “I would like to go to the pantry. I just feel so embarrassed that I am an older student, and I cannot provide enough for my family with my part time job. I always justify it by saying other people need it more than I do.” These

students' responses show that food pantry use stigma is prevalent among this population, however, it does not determine if food pantry use stigma acts as a barrier to food pantry use. Thus, to have a better understanding of food pantry use stigma, student food pantry use, and food insecurity in the university population, future research must build on these findings.

Future Research

The next step with the current dataset will be to understand how the three subscales of the RSFPE predict food pantry use. This will involve conducting logistic regression to better understand how the scales, along with other important factors, such as citizenship status, food insecurity status, off-campus food pantry use, and other demographic variables are related to RSFP use.

With some editing, the RSFPE subscales, particularly the FPU Stigma subscale, could be helpful for both measuring the presence of stigma in using other food pantries beyond the RSFP, as well as assessing the efficacy of stigma-reducing interventions like “rebranding” (El Zein et al., 2018). Future research could also explore what explains differences in food insecurity by citizenship status.

The RSFPE scale may be used to assess the efficacy of the RSFP, the perceptions of the RSFP by students, and finally, identify and address some of the limitations that the RSFP may or may not have recognized. Measuring these factors can serve as a quality measurement tool to address some of the limitations students have voiced including, “bigger awareness of the Rutgers food pantry,” “breaking down the stigma of using it,” and “[inaccessibility] on occasions with scheduling and timing.”

Future research should also explore how the Covid-19 pandemic has affected RU-NB students given evidence that it is increasing food insecurity in the general population (FeedingAmerica, 2020; Gundersen, Hake, Dewey, & Engelhard, 2020). In addition, because RU-NB closed its campus due to the Covid-19 crisis, the access to the RSFP has changed for many students. This is currently being studied by researchers at RU-NB.

Friendship and Food Pantry Use. Food insecure students who have heard of the RSFP report they do not have friends who used the RSFP (75%). This may give future researchers an indication of how social capital can improve food insecurity in the student population. Many students voiced the benefits of having friends, which include having access to food when they are not able to afford it, access to transportation, and access/awareness of resources available to them.

One student managed food insecurity by rationing “enough rice and eggs to last the rest of the week,” “[they] just didn’t eat,” or “[their] friends would bring [them] food from their houses.” Some people may be generous to provide some meals to students to help them cope with food insecurity. Future studies may be interested in the relationship between food pantry use, FPU stigma, and social capital (e.g., friends who use food pantries).

Limitations

As with any study, there are limitations in the research presented here. The cross-sectional nature of the survey means that the study cannot determine causation of food insecurity. It can identify correlated risk factors, which this study has identified being a non-U.S. citizen student is a risk factor for food insecurity. In addition, the fact that food insecurity was measured for a 30-day period and only collected during one month of the

school year means that they do not represent students' food insecurity over the entire year.

Another possible limitation for this study is the 3-point Likert-type scale used in the development of the new scale, which restricted the variability of the answers. The 3-point Likert-type scale used "Strongly Disagree," "Somewhat Agree," and "Strongly Agree." In the future, using a 5- or 7-point scale is recommended. In addition, the small sample sizes for non-US student populations may limit generalizability of the data as well as underpower our statistical tests. Promoting participation among foreign national and permanent residents should be encouraged in the future. Similarly, because of the small sample sizes, all foreign national students from multiple countries around the world were grouped together, and there may be differences by country, including with past experiences of food insecurity.

Conclusion

This study found that about one-in-three undergraduates at RU-NB is food insecure, and that about fewer than one-in-twenty use the on-campus food pantry. Citizenship status is related to food insecurity and food pantry use among undergraduate students. This study tested a novel scale to measure perceptions of an on-campus food pantry resulting in three subscales with varying reliability. The most reliable subscale, Food Pantry Use Stigma, is characterized by perceived social stigma associated with food insecurity and food assistance programs and was found to be significantly related to citizenship status, with non-US citizens experiencing more stigma than US citizens. This research and highlights that non-US citizens are particularly at risk for both food insecurity and feelings of stigma for using available resources.

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APPENDICES

APPENDIX A CONSENT FORM

This is the Rutgers Student Quality of Life Survey, which is an effort to understand issues and concerns regarding the quality of life of Rutgers students. In order to truly understand this issue, we need ALL Rutgers students to complete this survey. If you do complete the survey, you will be entered into a lottery to win one of ten \$100 RU Express cards. This study is being conducted by Dr. Cara Cuite, a professor in the Department of Human Ecology, School of Environmental and Biological Sciences at Rutgers University.

What we are asking you to do: We would like you to complete an online survey that will take about 5-10 minutes. Approximately 10,000 subjects will participate in the study.

What it means for you: This research is confidential. Confidential means that the research records will include some information about you and this information will be stored in such a manner that some linkage between your identity and the response in the research exists. We will not receive your name or other identifying information as part of this research study. However, we will receive some information about you from the Rutgers database, including your: · Year in school · Major · School · Part-time/full-time status · GPA · Gender · Age · Ethnicity · Citizenship · Military status · Parents' education level In addition, if you completed the 2016 Rutgers Hunger Survey, we may connect your 2016 responses to your 2019 responses. You may be contacted to participate in a voluntary follow-up interview or focus group for additional compensation.

Finally, we may share some of your anonymized data, stripped of any identifying information such as name, ethnicity, or gender, with the New Jersey Office of the Secretary of Higher Education. Please note that we will keep this information confidential by limiting access to the research data and keeping it on a secure, password protected computer network. The research team, and the Institutional Review Board at Rutgers University, and the NJ Office of the Secretary of Higher Education are the only parties that will be allowed to see the data, except as may be required by law. If a report of this study is published, or the results are presented at a professional conference, only group results will be stated. All study data will be kept for five years. There are no foreseeable risks to participation in this study.

Don't forget—you could win a \$100 gift card! Upon completion of the survey, you will be entered into a lottery to win one of ten gift cards in the amount of \$100. Taking part in this study may be helping researchers understand the issues of hunger on campus and helping to identify solutions to this problem. However, you may receive no direct benefit from taking part in this study. Participation in this study is voluntary. You may choose not to participate, and you may withdraw at any time during the study procedures without any penalty to you. In addition, you may choose not to answer any questions with which you are not comfortable.

What to do if you have any questions or problems: If you have any questions about the study or study procedures, you may contact Cara Cuite at cuite@aesop.rutgers.edu, or

848-932-4544. If you have any questions about your rights as a research subject, please contact an IRB Administrator at the Rutgers University, Arts and Sciences IRB:

Institutional Review Board

Rutgers University, the State University of New Jersey

Liberty Plaza / Suite 3200

335 George Street, 3rd Floor

New Brunswick, NJ 08901

Phone: 732-235-2866 Email: human-subjects@ored.rutgers.edu

By clicking “accept” below, you agree to participate in this research study.

☐ Accept

☐ Do not accept

APPENDIX B FOOD INSECURITY SURVEY INSTRUMENT**1.) Meal Plan**

1.) Do you have a Rutgers meal plan for Fall 2019 semester?

☐ Yes

☐ No

2.) How Many meals are on your meal plan for the Fall 2019 semester?

☐ 285

☐ 255

☐ 210

☐ 150

☐ 120

☐ 75

☐ 50

☐ I am not sure.

2.) 18-item Food Insecurity Survey: Adult Stage 1

Please indicate how often the following statements are true for you.

1.) “I worried whether my food would run out before I got money to buy more.” Was

that often true, sometimes true, or never true for you in the last 30 days?

☐ Often True

☐ Sometimes True

☐ Never True

2.) “The food that I bought just didn’t last, and I didn’t have money to get more.”

Was that often true, sometimes true, or never true for you in the last 30 days?

- ☐ Often True
- ☐ Sometimes True
- ☐ Never True

3.) “I couldn’t afford to eat balanced meals.” Was that often true, sometimes true, or never true for you in the last 30 days?

- ☐ Often True
- ☐ Sometimes True
- ☐ Never True

Logic: If “Often true” or “Sometimes true” were selected for any of the questions above (Adult Stage 1), display the following...

3.) 18-item Food Insecurity Survey: Adult Stage 2

4.) In the last 30 days, did you ever cut the size of your meals or skip meals because there wasn’t enough money for food?

- ☐ Yes
- ☐ No

Logic: If “Yes” was selected, display the following question.

5.) In the last 30 days, how many days did this happen?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ ...30

Logic: If “Often true” or “Sometimes true” were selected for any of the questions above (Adult Stage 1), display the following...

6.) In the last 30 days, did you ever eat less than you felt you should because there wasn't enough money for food?

☐ Yes

☐ No

7.) In the last 30 days, were you ever hungry but didn't eat because there wasn't enough money for food?

☐ Yes

☐ No

8.) In the last 30 days, did you lose weight because there wasn't enough money for food?

☐ Yes

☐ No

4.) 18-item Food Insecurity Survey: Adult Stage 3

Logic: If “Often true” or “Sometimes true” were selected for any of the questions above (Adult Stage 2), display the following...

9.) In the last 30 days, did you ever not eat for a whole day because there wasn't enough money for food?

☐ Yes

☐ No

Logic: If “Yes” was selected, display the following question.

10.) In the last 30 days, how many days did this happen?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ ...30

5.) 18-item Food Insecurity: Childhood Food Security

Screener: Do you have any biological, adopted, step or foster children who live in your household?

- ☐ Yes
- ☐ No

Logic: If “Yes” was selected for the statement, “Do you have any biological children who live in your household,” display the following:

Please indicate how often the following statements are true for you?

11.) “I relied on only a few kinds of low-cost food to feed my children because I was running out of money to buy food.”

- ☐ Often True
- ☐ Sometimes True
- ☐ Never True

12.) “I couldn’t feed my children a balanced meal, because I couldn’t afford that.”

- ☐ Often True
- ☐ Sometimes True
- ☐ Never True

13.) "My child was not eating enough because I just couldn't afford enough food."

☐ Often True

☐ Sometimes True

☐ Never True

14.) In the last 30 days, did you ever cut the size of your children's meals because there wasn't enough money for food?

☐ Yes

☐ No

15.) In the last 30 days, did your children ever skip meals because there wasn't enough money for food?

☐ Yes

☐ No

16.) In the last 30 days, how many days did this happen?

☐ 1

☐ 2

☐ 3

☐ 4

☐ 5

☐ ...30

17.) In the last 30 days, were your children ever hungry but you just couldn't afford to buy food?

☐ Yes

☐ No

18.) In the last 30 days, did any of your children ever not eat for a whole day because there wasn't enough money for food?

☐ Yes

☐ No

APPENDIX C FOOD PANTRY USE SURVEY INSTRUMENT

I. On-Campus Food Pantry Use Screener

- 1.) Have you ever heard about the Rutgers Student Food Pantry, a pantry that provides food for Rutgers Students in need?

☐ Yes

☐ No

Logic: If “Yes” was selected, display the following question.

- 2.) Have you ever received food from the Rutgers Student Food Pantry?

☐ Yes

☐ No

Logic: If “Yes” was selected, display the following question.

Please indicate how much you agree with the following statements.

- 3.) I am concerned about the confidentiality of the Rutgers Student Food Pantry.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

- 4.) I feel that other students need the Rutgers Student Food Pantry more than I do.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

- 5.) I am afraid one of my peers or classmates will see me using the Rutgers Student Food Pantry.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

6.) I feel that there is a stigma attached to using the Rutgers Student Food Pantry.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

7.) It is easy for me to get to the Rutgers Student Food Pantry location.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

8.) I believe that if a student needs help, they should use the Rutgers Student Food Pantry.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

9.) The Rutgers Student Food Pantry is worth the effort to visit.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

10.) The Rutgers Student Food Pantry has convenient hours.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

11.) I understand what the Rutgers Student Food Pantry does.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

12.) I have a friend that uses the Rutgers Student Food Pantry.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

13.) The Rutgers Student Food Pantry is a resource intended for me.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

14.) I would only use the Rutgers Student Food Pantry if I was completely without food.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

15.) I am embarrassed to use the Rutgers Student Food Pantry.

☐ Do not agree at all

☐ Somewhat agree

☐ Strongly agree

APPENDIX D SAMPLE REPRESENTATIVENESS

Fall 2019 Basic Needs Insecurity Survey Representation

| | <i>Total N</i> | <i>Percent</i> | <i>Response N</i> | <i>Response Rate</i> | <i>Change</i> | <i>Expected Sample Value</i> | <i>Difference (Expected - Observed)</i> | <i>Difference^2/ Expected</i> | <i>Chi- Square Value</i> | <i>P- Value</i> | <i>Cramer's V</i> |
|----------------------------|----------------|----------------|-----------------------|--------------------------|---------------|--------------------------------------|---|-----------------------------------|----------------------------------|---------------------|-----------------------|
| Total | 34,980 | | 5,063 | 14.5% | | | | | | | |
| Citizenship | | | | | | | | | 78.00 | 0.00 | 0.05 |
| U.S. Citizen | 29,374 | 84.0% | 4,473 | 15.2% | 0.8% | 4252 | -221 | 11.53 | | | |
| Permanent Resident | 2,073 | 5.9% | 252 | 12.2% | -2.3% | 300 | 48 | 7.69 | | | |
| Foreign National | 3,533 | 10.1% | 338 | 9.6% | -4.9% | 511 | 173 | 58.78 | | | |
| Class Level | | | | | | | | | | | |
| Total | | | | | | | | | 299.25 | 0.00 | 0.09 |
| First Year | 7,719 | 22.1% | 1,561 | 20.2% | 5.7% | 1117 | -444 | 176.25 | | | |
| Sophomore | 8,007 | 22.9% | 1,239 | 15.5% | 1.0% | 1159 | -80 | 5.53 | | | |
| Junior | 8,388 | 24.0% | 1,100 | 13.1% | -1.4% | 1214 | 114 | 10.72 | | | |
| Senior | 10,866 | 31.1% | 1,163 | 10.7% | -3.8% | 1573 | 410 | 106.75 | | | |
| Gender | | | | | | | | | 479.13 | 0.00 | 0.12 |
| Female | 17,137 | 49.0% | 3,259 | 19.0% | 4.5% | 2480 | -779 | 244.40 | | | |
| Male | 17,843 | 51.0% | 1,804 | 10.1% | -4.4% | 2583 | 779 | 234.73 | | | |
| School | | | | | | | | | 59.88 | 0.00 | 0.04 |
| EJB School of Planning and | 264 | 0.8% | 39 | 14.8% | 0.3% | 38 | -1 | 0.02 | | | |

| | | | | | | | | | |
|--|--------|-------|-------|-------|-------|------|-------|-------|------|
| Public Policy (UG) | | | | | | | | | |
| Ernest Mario School of Pharmacy (UG) | 891 | 2.5% | 144 | 16.2% | 1.7% | 129 | -15 | 1.75 | |
| Mason Gross School of the Arts (UG) | 856 | 2.4% | 103 | 12.0% | -2.4% | 124 | 21 | 3.52 | |
| Rutgers Business School - New Brunswick (UG) | 4,633 | 13.2% | 768 | 16.6% | 2.1% | 671 | -97 | 14.15 | |
| School of Nursing (UG) | 402 | 1.1% | 64 | 15.9% | 1.4% | 58 | -6 | 0.58 | |
| School of Arts and Sciences | 20,407 | 58.3% | 2,832 | 13.9% | -0.6% | 2954 | 122 | 5.01 | |
| School of Engineering | 3,997 | 11.4% | 535 | 13.4% | -1.1% | 579 | 44 | 3.27 | |
| School of Environmental and Biological Sciences | 3,222 | 9.2% | 558 | 17.3% | 2.8% | 466 | -92 | 18.01 | |
| School of Management and Labor Relations (UG) | 308 | 0.9% | 20 | 6.5% | -8.0% | 45 | 25 | 13.55 | |
| Full Time/ Part Time | | | | | | | | | |
| | | | | | | | 62.64 | 0.00 | 0.04 |

| | | | | | | | | |
|--|--------|-------|-------|-------|-------|------|------|-------|
| Full Time | 33,471 | 95.7% | 4,959 | 14.8% | 0.3% | 4845 | -114 | 2.70 |
| Part Time | 1,509 | 4.3% | 104 | 6.9% | -7.6% | 218 | 114 | 59.93 |
| Race/Ethnicity | | | | | | | | |
| African | | | | | | | | |
| American | 2,214 | 6.3% | 281 | 12.7% | -1.8% | 320 | 39 | 4.86 |
| Asian | 13,379 | 38.2% | 1854 | 13.9% | -0.6% | 1936 | 82 | 3.51 |
| Hispanic | 4,570 | 13.1% | 630 | 13.8% | -0.7% | 661 | 31 | 1.50 |
| White | 12,829 | 36.7% | 1969 | 15.3% | 0.9% | 1857 | -112 | 6.77 |
| Other (includes American Indian, Other, Two or More and Unknown) | 1,988 | 5.7% | 329 | 16.5% | 2.1% | 288 | -41 | 5.92 |